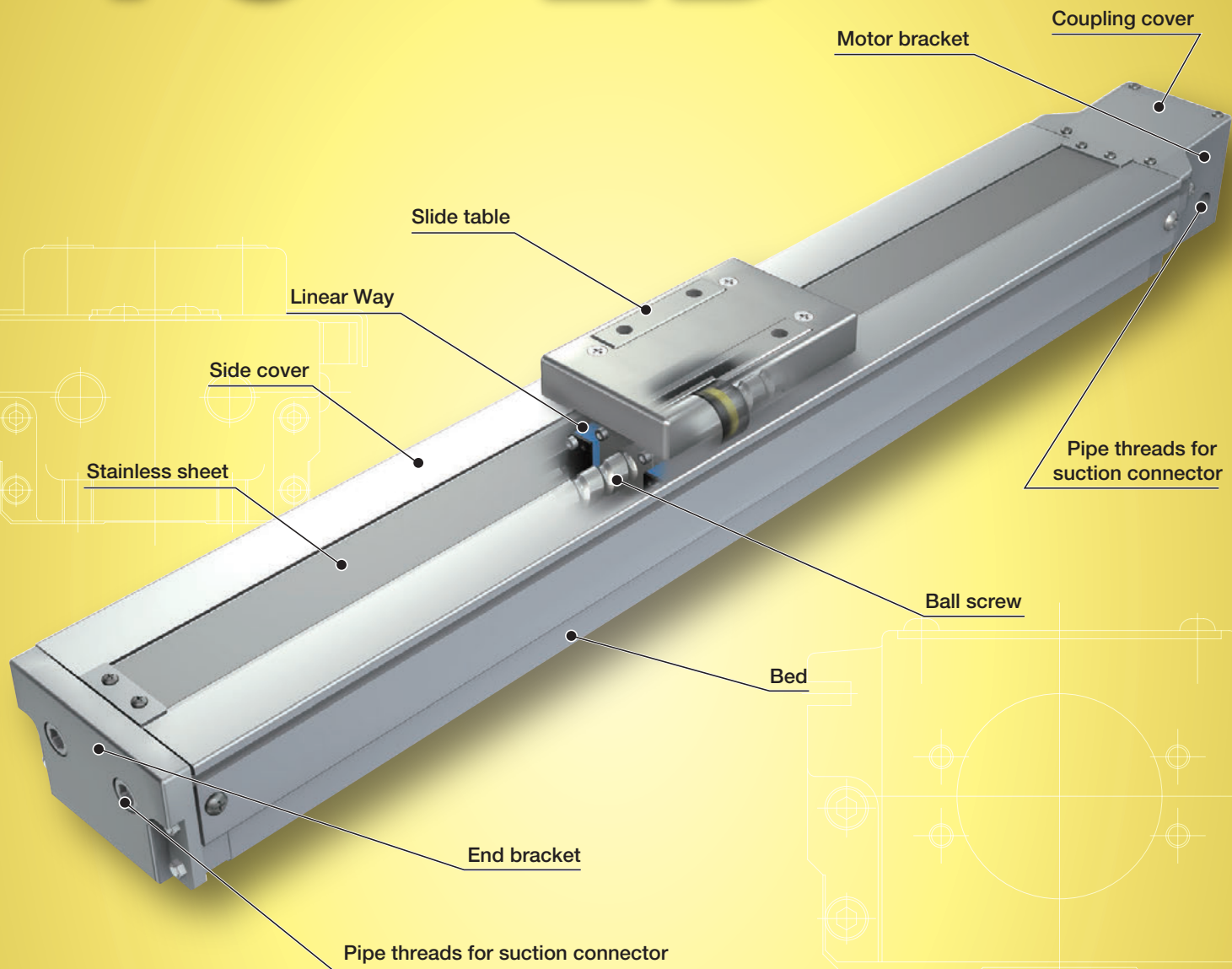
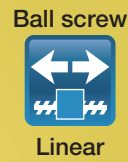


TC...EB

TC...EB

TC...EB



Major product specifications

| | |
|-----------------------------|---------------------------------------|
| Driving method | Precision ball screw |
| Linear motion rolling guide | Linear Way (ball type) |
| Built-in lubrication part | Lubrication part "C-Lube" is built-in |
| Material of table and bed | High-strength aluminum alloy |
| Sensor | Select by identification number |

Accuracy

unit: mm

| | |
|-------------------------------|-------------|
| Positioning repeatability | ±0.002 |
| Positioning accuracy | 0.035~0.065 |
| Lost motion | - |
| Parallelism in table motion A | - |
| Parallelism in table motion B | 0.008~0.016 |
| Attitude accuracy | - |
| Straightness | - |
| Backlash | 0.005 |

Points

1 Light weight, low profile and compact clean table

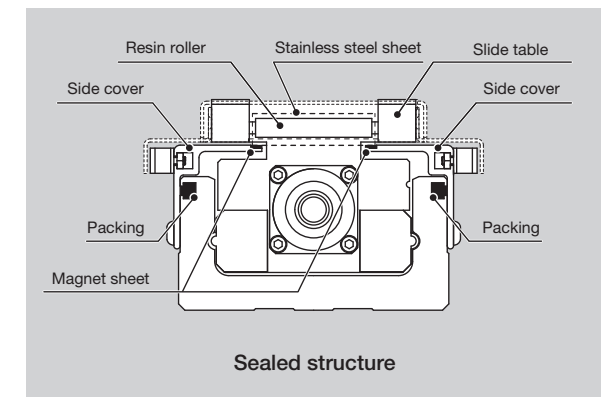
Positioning table of a structure with enhanced sealing property inside the table, based on light weight, low profile and compact Precision Positioning Table TE. Thanks to optimal design of linear motion rolling guide and ball screws, low cross sectional height as low as 50mm for TC50EB, 54mm for TC60EB and 67mm for TC86EB is realized. Since the sensor is designed to be directly mounted into the mounting groove, it contributes to space saving.

3 High corrosion resistance

Anodized high-tension aluminum alloy and stainless steel (stainless sheet) are used in main components to ensure excellent corrosion resistance.

2 Compatible with cleanliness class 3 [Page II-167](#)

Press the stainless sheet against the side cover using the resin roller within the slide table, securely absorb it with a strong magnet sheet and seal the drive parts and slide table guiding parts. Dust-generation in proximity is prevented by sucking air from an enclosed space and class 3 cleanliness rating based on **IKO** measurement method is realized. Low dust-generation grease CGL for clean environment is contained in slide table guiding parts and ball screws to suppress dust-generation.



Variation

| Shape | Model | Bed width (mm) | | |
|-------|---------|----------------|----|----|
| | | 50 | 60 | 86 |
| | TC...EB | ☆ | ☆ | ☆ |

About measurement of cleanliness

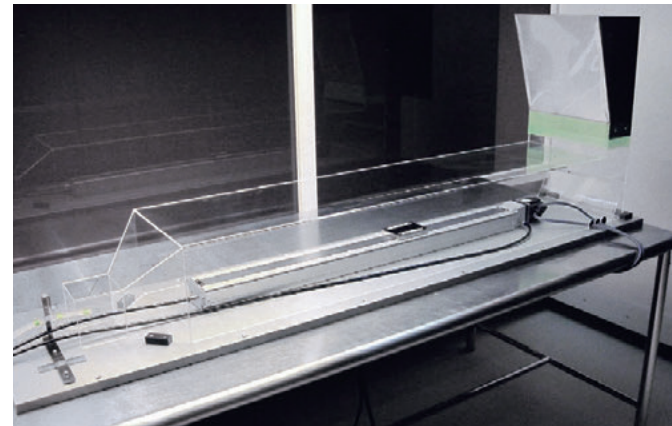
Cleanliness refers to classified air cleanliness levels based on size (particle diameter) and quantity of suspended particulates per unit volume.

IKO measures cleanliness by following the procedures.

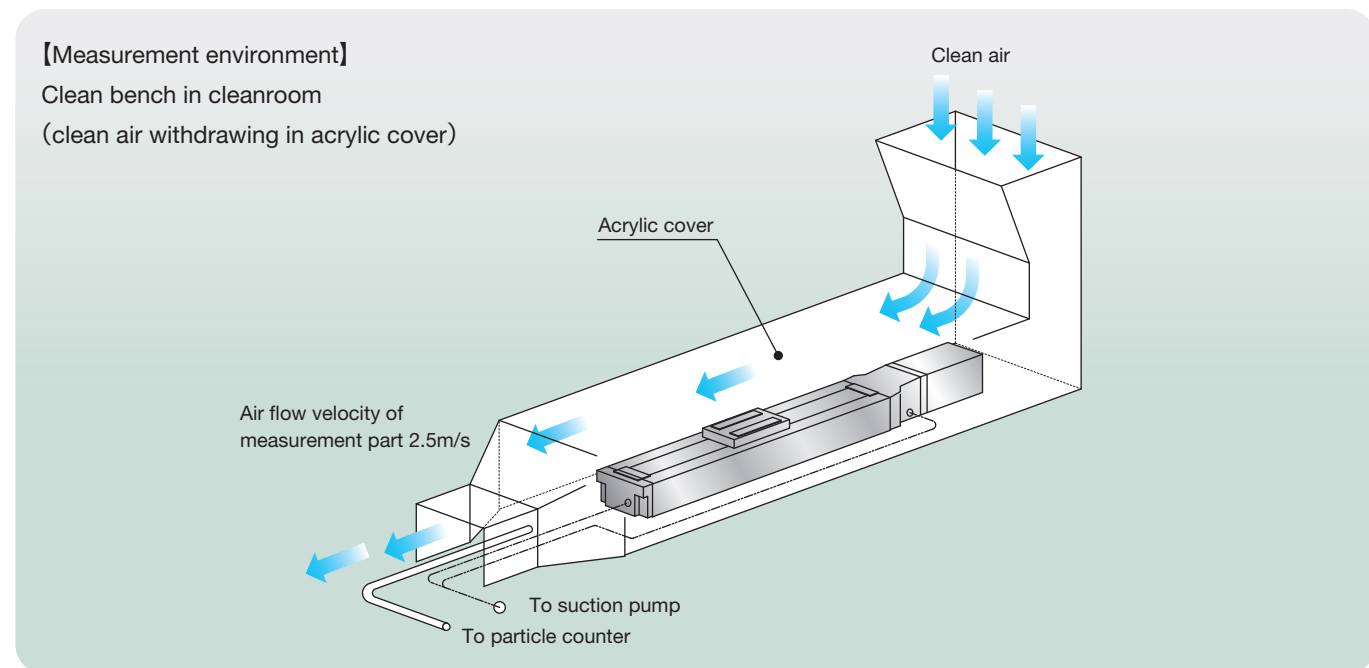
● **Measuring condition**

| Item | Content |
|---------------------------------------|---|
| Measuring equipment | Particle counter |
| Air flow velocity of measurement part | 2.5m/s |
| Measured air quantity | 28.3L (1cf) |
| Measurement time | 48h (10min/measurement, 1measurement/h) |

● **Appearance of test device**



● **Outline of test device**

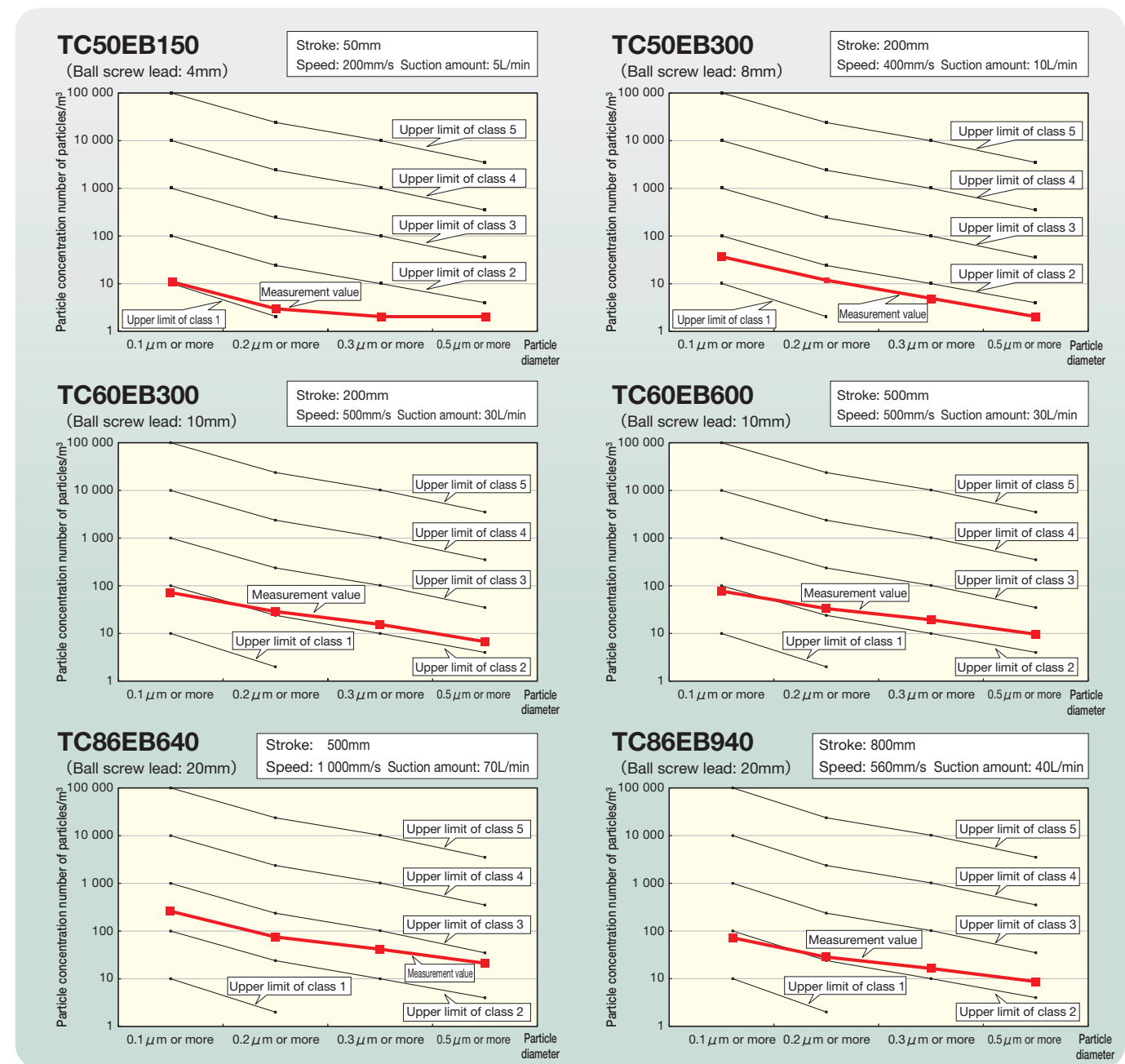


● **Upper concentration limit of each cleanliness class (JIS B 9920 : 2002, ISO 14644-1: 1999)** unit: number of particles/m³

| Cleanliness | Particle diameter | | | |
|--|-------------------|-----------------|-----------------|-----------------|
| | 0.1μm or larger | 0.2μm or larger | 0.3μm or larger | 0.4μm or larger |
| Class 1 | 10 | 2 | — | — |
| Class 2 | 100 | 24 | 10 | 4 |
| Class 3 (Federal Standard 209D Class 1) | 1 000 | 237 | 102 | 35 |
| Class 4 (Federal Standard 209D Class 10) | 10 000 | 2 370 | 1 020 | 352 |
| Class 5 (Federal Standard 209D Class 100) | 100 000 | 23 700 | 10 200 | 3 520 |
| Class 6 (Federal Standard 209D Class 1000) | 1 000 000 | 237 000 | 102 000 | 35 200 |

Actual measurement data of cleanliness

● **Example of measurement data [Upper concentration limit chart for each cleanliness class]**



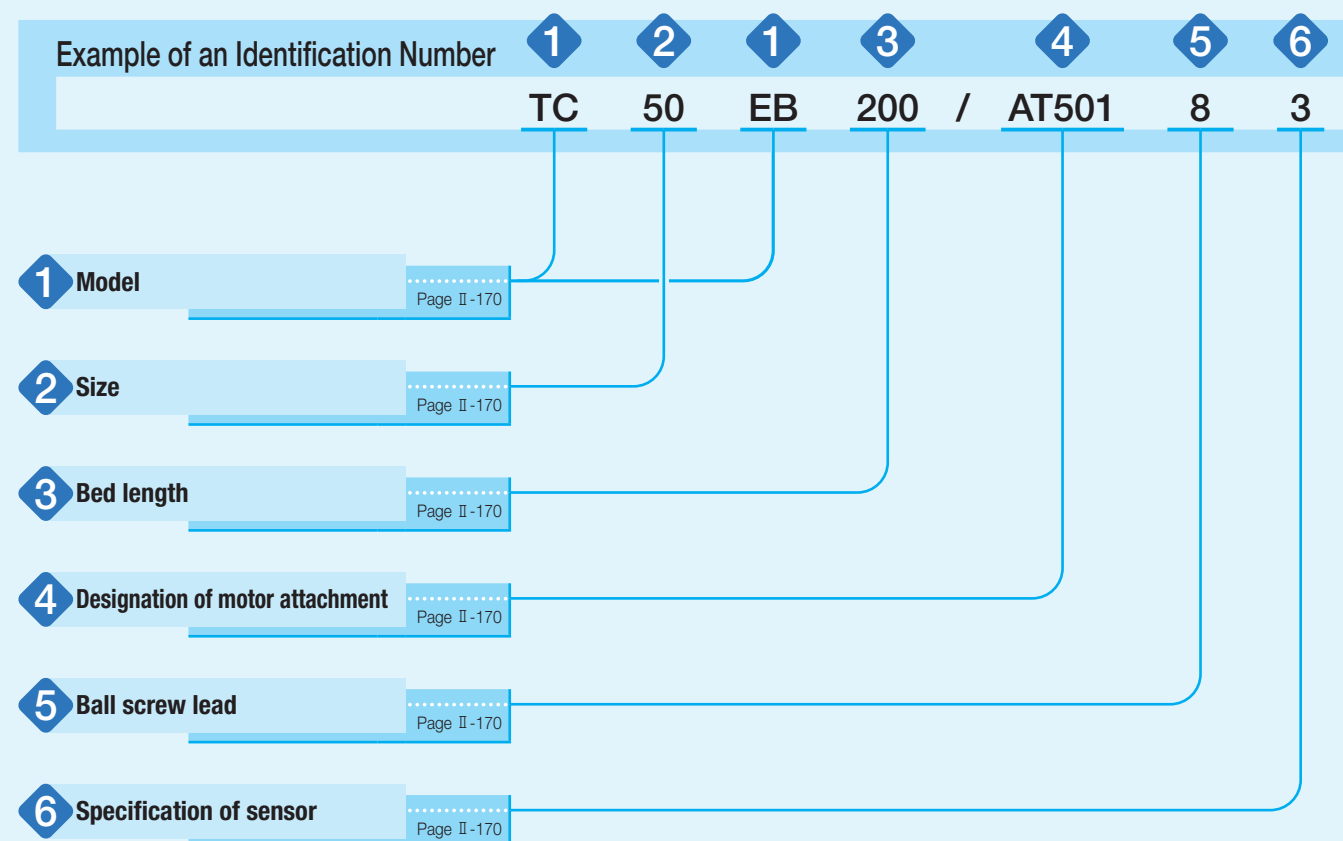
● **Measurement result of cleanliness**

| Model and size | Bed length | Ball screw lead mm | Stroke length mm | Speed mm/s | Suction amount L/min | Cleanliness class (JIS B 9920:2002, ISO 14644-1: 1999) |
|----------------|------------|--------------------|------------------|------------|----------------------|--|
| TC50EB | 150 | 4 | 50 | 200 | 5 | Class 2 |
| | 200 | 4 | 100 | 200 | 10 | Class 2 |
| | 300 | 8 | 200 | 400 | 10 | Class 2 |
| TC60EB | 150 | 5 | 50 | 250 | 30 | Class 3 |
| | 300 | 10 | 200 | 500 | 30 | Class 3 |
| | 600 | 10 | 500 | 500 | 30 | Class 3 |
| TC86EB | 340 | 10 | 200 | 500 | 30 | Class 3 |
| | 640 | 10 | 500 | 500 | 40 | Class 3 |
| | 640 | 20 | 500 | 1 000 | 70 | Class 3 |
| | 940 | 20 | 800 | 560 | 40 | Class 3 |

Remark: Cleanliness varies depending on operating environment and operating conditions.

1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Identification Number



Identification Number and Specification

- 1 **Model** TC...EB: Cleanroom Precision Positioning Table TC
- 2 **Size** Size indicates bed width.
Select a size from the list of Table 1.
- 3 **Bed length** Select a bed length from the list of Table 1.

Table 1 Sizes, bed widths, and bed lengths unit: mm

| Model and size | Bed width | Bed length (stroke length) | | | | | | |
|----------------|-----------|----------------------------|----------|----------|----------|----------|----------|----------|
| | | 150(50) | 200(100) | 250(150) | 300(200) | 500(400) | 600(500) | 940(800) |
| TC50EB | 50 | 150(50) | 200(100) | 250(150) | 300(200) | — | — | — |
| TC60EB | 60 | 150(50) | 200(100) | 300(200) | 400(300) | 500(400) | 600(500) | — |
| TC86EB | 86 | 340(200) | 440(300) | 540(400) | 640(500) | 740(600) | 840(700) | 940(800) |

- 4 **Designation of motor attachment** AT500: Without motor attachment
To specify the motor attachment, select it from the list of Table 2.
 - Motor should be prepared by customer.
 - Please specify motor attachment applicable to motor for use.
 - If motor attachment is specified, a coupling shown in Table 3 is mounted on the main body before shipment. However, the final position adjustment should be made by customer since it is only temporarily fixed.
 - For a product without motor attachment (AT500), no coupling is attached.
- 5 **Ball screw lead**
 - 4: Lead 4mm (applied to TC50EB)
 - 5: Lead 5mm (applied to TC60EB)
 - 8: Lead 8mm (applied to TC50EB)
 - 10: Lead 10mm (applied to TC60EB and TC86EB)
 - 20: Lead 20mm (applied to TC86EB)
- 6 **Specification of sensor**
 - 0: Without sensor
 - 2: Two units of sensor mounted (limit)
 - 3: Three units of sensor mounted (limit, pre-origin)
 - 4: Four units of sensor mounted (limit, pre-origin, origin)
 - 5: Two sensors attached (limit)
 - 6: Three sensors attached (limit and pre-origin)
 - 7: Four sensors attached (limit, pre-origin, origin)

If sensor mounting (symbol 2, 3, or 4) is specified, the sensor is mounted into the mounting groove on the side cover, and two detecting plates are attached onto the slide table.
If sensor attachment (symbol 5, 6, or 7) is specified, mounting screws and nuts for sensor are provided in addition to the specified number of sensors, and two detecting plates are attached onto the slide table.

Table 2 Application of motor attachment

| Type | Models of motor to be used | | | | Flange size | Motor attachment | | |
|---|---------------------------------|----------|--------------------|----------------|-------------|------------------|--------|--------|
| | Manufacturer | Series | Model | Rated output W | | TC50EB | TC60EB | TC86EB |
| AC servo motor | YASKAWA ELECTRIC CORPORATION | Σ-V | SGMJV-A5A | 50 | □40 | AT501 | AT502 | — |
| | | | SGMAV-A5A | | | AT501 | AT502 | — |
| | | | SGMJV-01A | 100 | | — | AT502 | — |
| | | | SGMAV-01A | | | — | AT502 | — |
| | | | SGMJV-02A | 200 | | — | — | AT503 |
| | | | SGMAV-02A | | | — | — | AT503 |
| | Mitsubishi Electric Corporation | J3, J4 | HF-MP053, HG-MR053 | 50 | □40 | AT501 | AT502 | — |
| | | | HF-KP053, HG-KR053 | | | AT501 | AT502 | — |
| | | | HF-MP13, HG-MR13 | 100 | | — | AT502 | — |
| | | | HF-KP13, HG-KR13 | | | — | AT502 | — |
| | | | HF-MP23, HG-MR23 | 200 | | — | — | AT503 |
| | | | HF-KP23, HG-KR23 | | | — | — | AT503 |
| | Panasonic Corporation | MINAS A5 | MSMD5A | 50 | □38 | AT504 | AT505 | — |
| | | | MSME5A | | | AT504 | AT505 | — |
| | | | MSMD01 | 100 | | — | AT505 | — |
| | | | MSME01 | | | — | AT505 | — |
| | | | MSMD02 | 200 | | — | — | AT506 |
| | | | MSME02 | | | — | — | AT506 |
| Hitachi Industrial Equipment Systems Co., Ltd | AD | ADMA-R5L | 50 | □40 | AT501 | AT502 | — | |
| | | ADMA-01L | 100 | | — | AT502 | — | |
| | | ADMA-02L | 200 | | — | — | AT503 | |
| Stepper motor | ORIENTAL MOTOR Co., Ltd. | α step | AR46 | □42 | AT507 | — | — | |
| | | | AR66 | | — | — | AT508 | |
| | | | AR69 | | — | — | AT508 | |
| | | | AS46 | | □42 | AT509 | — | — |
| | | | AS66 | | □60 | — | AT510 | AT511 |
| | | | AS69 | | □60 | — | AT510 | AT511 |
| | | RK CRK | RK54 · CRK54 | □42 | AT509 | — | — | |
| | | | RK56 · CRK56 (1) | □60 | — | AT510 | AT511 | |

Note (1) Applicable to the outer diameter φ8 of motor output shaft.
Remark: For detailed motor specifications, please see respective motor manufacturer's catalog.

Table 3 Coupling models

| Motor attachment | Coupling models | Manufacturer | Coupling inertia J_c ×10 ⁻⁵ kg · m ² |
|------------------|-----------------|-----------------------|---|
| AT501 | XGS-19C-5× 8 | Nabeya Bi-tech Kaisha | 0.062 |
| AT502 | XGS-19C-5× 8 | Nabeya Bi-tech Kaisha | 0.062 |
| AT503 | XGS-30C-8×14 | Nabeya Bi-tech Kaisha | 0.55 |
| AT504 | XGS-19C-5× 8 | Nabeya Bi-tech Kaisha | 0.062 |
| AT505 | XGS-19C-5× 8 | Nabeya Bi-tech Kaisha | 0.062 |
| AT506 | XGS-30C-8×11 | Nabeya Bi-tech Kaisha | 0.55 |
| AT507 | XGS-19C-5× 6 | Nabeya Bi-tech Kaisha | 0.062 |
| AT508 | XGS-30C-8×10 | Nabeya Bi-tech Kaisha | 0.55 |
| AT509 | XGS-19C-5× 5 | Nabeya Bi-tech Kaisha | 0.062 |
| AT510 | XGS-19C-5× 8 | Nabeya Bi-tech Kaisha | 0.062 |
| AT511 | XGS-30C-8× 8 | Nabeya Bi-tech Kaisha | 0.55 |

Remark: For detailed coupling specifications, please see respective manufacturer's catalog.

Table 4 Accuracy

unit: mm

| Model and size | Bed length | Positioning repeatability | Positioning accuracy | Parallelism in table motion B | Backlash |
|----------------|------------|---------------------------|----------------------|-------------------------------|----------|
| TC50EB | 150 | ±0.002 | 0.035 | 0.008 | 0.005 |
| | 200 | | | | |
| | 250 | | 0.040 | | |
| | 300 | | | | |
| TC60EB | 150 | ±0.002 | 0.035 | 0.008 | 0.005 |
| | 200 | | 0.040 | | |
| | 300 | | | | |
| | 400 | | 0.045 | | |
| | 500 | | | | |
| 600 | 0.050 | | | | |
| TC86EB | 340 | ±0.002 | 0.040 | 0.008 | 0.005 |
| | 440 | | 0.045 | | |
| | 540 | | | | |
| | 640 | | 0.050 | | |
| | 740 | | | | |
| | 840 | | 0.014 | | |
| 940 | 0.016 | | | | |

Table 5 Maximum speed

| Motor type | Model and size | Bed length mm | Maximum speed mm/s | | | | |
|----------------|----------------|---------------|--------------------|----------|----------|-----------|-----------|
| | | | Lead 4mm | Lead 5mm | Lead 8mm | Lead 10mm | Lead 20mm |
| AC servo motor | TC50EB | — | 200 | — | 400 | — | — |
| | TC60EB | — | — | 250 | — | 500 | — |
| | TC86EB | 640 or less | — | — | — | 500 | 1 000 |
| | | 740 | — | — | — | 500 | 1 000 |
| | | 840 | — | — | — | 400 | 800 |
| 940 | — | — | — | 330 | 660 | | |
| Stepper motor | TC50EB | — | 120 | — | 240 | — | — |
| | TC60EB | — | — | 150 | — | 300 | — |
| | TC86EB | 840 or less | — | — | — | 300 | 600 |
| 940 | | — | — | — | 300 | 600 | |

Remark: To measure the practical maximum speed, it is required to consider operation patterns based on the motor to be used and load conditions.

Table 6 Allowable moment

| Model and size | Allowable moment N · m |
|----------------|------------------------|
| TC50EB | 5.0 |
| TC60EB | 6.0 |
| TC86EB | 10.0 |

Remark: Applied in all directions.

Table 7 Maximum carrying mass

| Model and size | Ball screw lead mm | Maximum carrying mass kg | |
|----------------|--------------------|--------------------------|----------|
| | | Horizontal | Vertical |
| TC50EB | 4 | 12 | 11 |
| | 8 | 12 | 7 |
| TC60EB | 5 | 17 | 13 |
| | 10 | 17 | 8 |
| TC86EB | 10 | 36 | 18 |
| | 20 | 29 | 10 |

Specifications

Table 8 Load rating of linear motion rolling guide

| Model and size | Basic dynamic load rating C N | Basic static load rating C_0 N | Static moment rating N·m | | |
|----------------|------------------------------------|-------------------------------------|--------------------------|-------|-------|
| | | | T_0 | T_x | T_y |
| TC50EB | 8 490 | 12 500 | 211 | 99.5 | 99.5 |
| TC60EB | 12 400 | 17 100 | 354 | 151 | 151 |
| TC86EB | 26 800 | 35 900 | 1 110 | 472 | 472 |

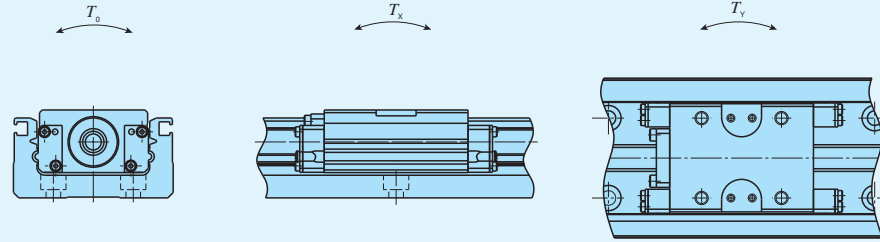


Table 9.1 Specifications of ball screw 1

| Model and size | Lead mm | Shaft dia. mm | Basic dynamic load rating C N | Basic static load rating C_0 N |
|----------------|------------|------------------|------------------------------------|-------------------------------------|
| TC50EB | 4 | 8 | 2 290 | 3 575 |
| | 8 | | 1 450 | 2 155 |
| TC60EB | 5 | 10 | 2 730 | 4 410 |
| | 10 | | 1 720 | 2 745 |
| TC86EB | 10 | 12 | 3 820 | 6 480 |
| | 20 | | 2 300 | 3 920 |

Table 9.2 Specifications of ball screw 2

unit: mm

| Model and size | Bed length | Shaft dia. | Overall length |
|----------------|------------|------------|----------------|
| TC50EB | 150 | 8 | 192.5 |
| | 200 | | 242.5 |
| | 250 | | 292.5 |
| | 300 | | 342.5 |
| TC60EB | 150 | 10 | 194 |
| | 200 | | 244 |
| | 300 | | 344 |
| | 400 | | 444 |
| | 500 | | 544 |
| TC86EB | 340 | 12 | 395 |
| | 440 | | 495 |
| | 540 | | 595 |
| | 640 | | 695 |
| | 740 | | 795 |
| | 840 | | 895 |
| 940 | 995 | | |

Table 10 Moment of inertia of sectional area of bed

| Model and size | Moment of inertia of sectional area mm ⁴ | | Center of gravity e mm |
|----------------|---|-------------------|--------------------------------|
| | I_x | I_y | |
| TC50EB | 1.3×10^4 | 1.2×10^5 | 6.4 |
| TC60EB | 4.7×10^4 | 3.2×10^5 | 8.8 |
| TC86EB | 2.0×10^5 | 1.3×10^6 | 13.0 |

Table 11 Table inertia and starting torque

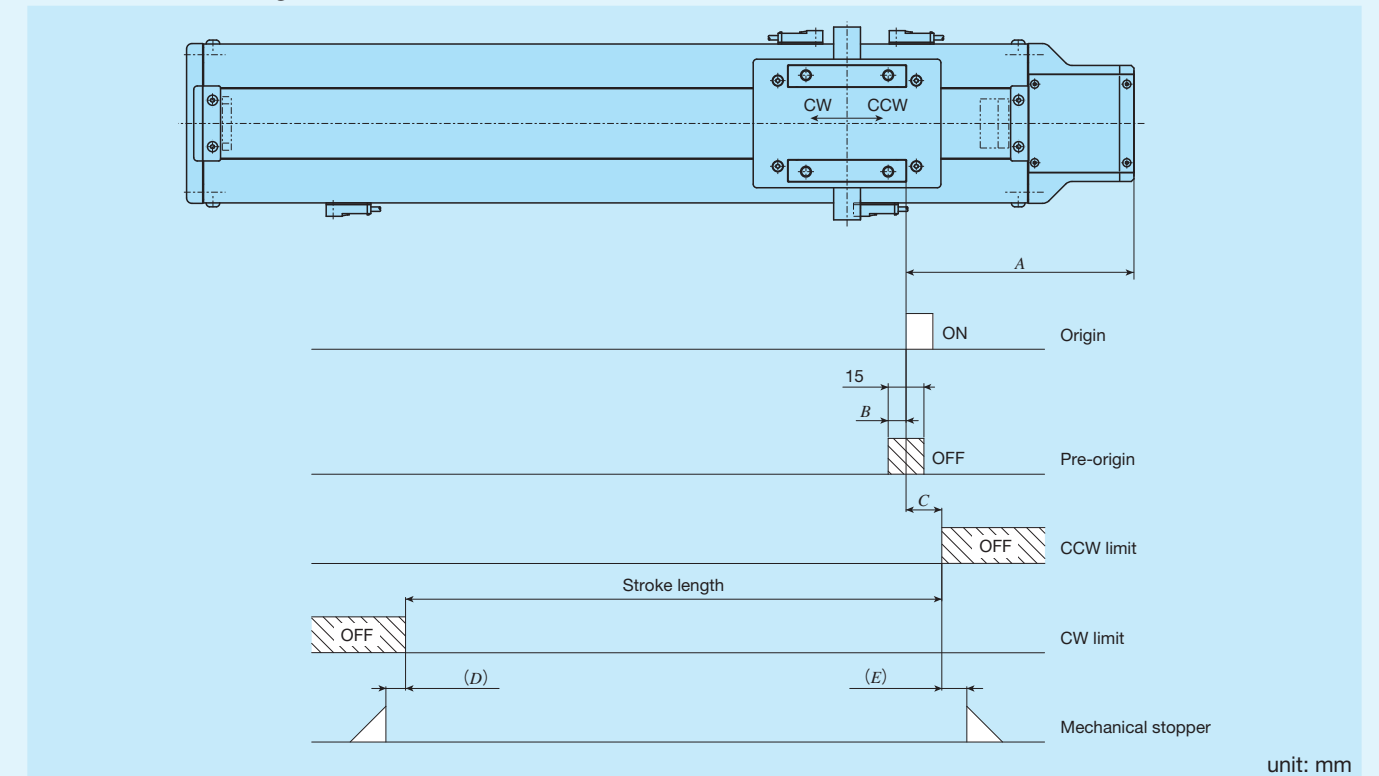
| Model and size | Bed length mm | Table inertia $J_T \times 10^{-5} \text{kg} \cdot \text{m}^2$ | | | | | Starting torque T_s N·m | | | | |
|----------------|------------------|---|-------------|-------------|--------------|--------------|---------------------------|-------------|-------------|--------------|--------------|
| | | Lead 4mm | Lead 5mm | Lead 8mm | Lead 10mm | Lead 20mm | Lead 4mm | Lead 5mm | Lead 8mm | Lead 10mm | Lead 20mm |
| TC50EB | 150 | 0.062 | — | 0.092 | — | — | 0.03 | — | 0.03 | — | — |
| | 200 | 0.074 | — | 0.104 | — | — | | — | — | — | — |
| | 250 | 0.090 | — | 0.120 | — | — | | — | — | — | — |
| | 300 | 0.102 | — | 0.132 | — | — | | — | — | — | — |
| TC60EB | 150 | — | 0.14 | — | 0.21 | — | — | 0.03 | — | 0.04 | — |
| | 200 | — | 0.20 | — | 0.27 | — | | | | | |
| | 300 | — | 0.27 | — | 0.34 | — | | | | | |
| | 400 | — | 0.34 | — | 0.41 | — | | | | | |
| | 500 | — | 0.41 | — | 0.48 | — | | | | | |
| TC86EB | 600 | — | 0.49 | — | 0.55 | — | — | — | — | 0.06 | 0.10 |
| | 340 | — | — | — | 0.78 | 1.36 | | | | | |
| | 440 | — | — | — | 0.93 | 1.51 | | | | | |
| | 540 | — | — | — | 1.08 | 1.66 | | | | | |
| | 640 | — | — | — | 1.23 | 1.81 | | | | | |
| | 740 | — | — | — | 1.38 | 1.96 | | | | | |
| 840 | — | — | — | 1.53 | 2.11 | | | | | | |
| 940 | — | — | — | 1.68 | 2.26 | | | | | | |

Mounting

For the processing accuracy of the Precision Positioning Table mounting surface and the tightening torque of the fixing screws, see page III-29.

Sensor Specification

Table 12 Sensor timing chart



| Model and size | Ball screw lead | A | B | C | D | E |
|----------------|-----------------|-------|----|----|-----|----|
| TC50EB | 4 | 104 | 3 | 20 | 7 | 7 |
| | 8 | | 5 | | | |
| TC60EB | 5 | 104 | 3 | 20 | 7.5 | 8 |
| | 10 | | 5 | | | |
| TC86EB | 10 | 127.5 | 5 | 20 | 11 | 14 |
| | 20 | | 10 | | | |

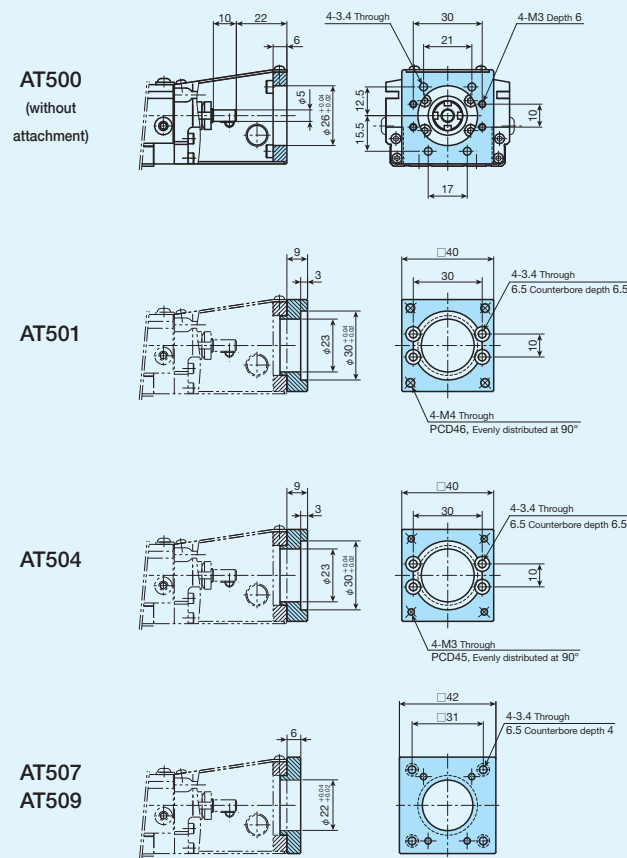
Remarks 1. Mounting a sensor is specified using the corresponding identification number.

2. For the specifications of respective sensors, please see the section of sensor specification in General Explanation.

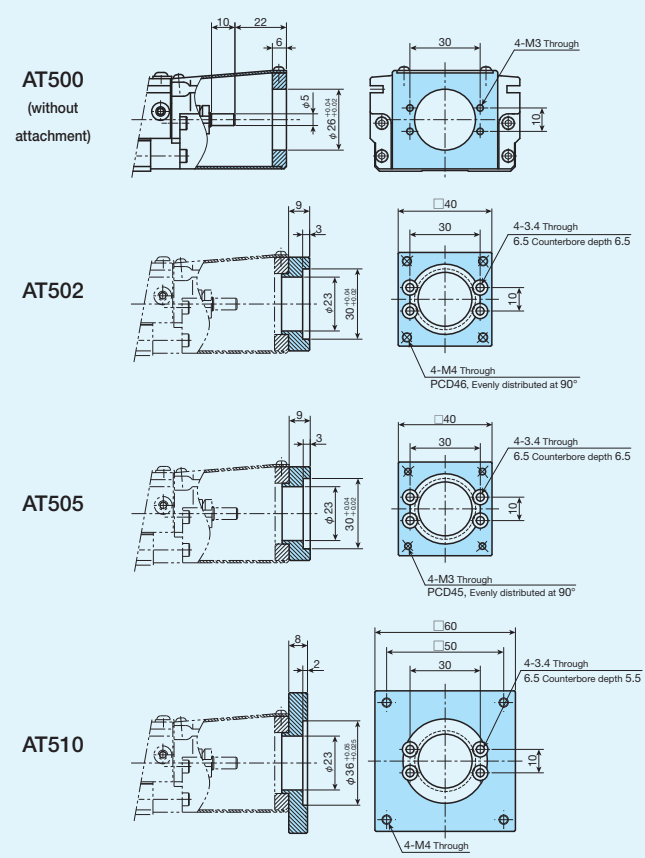
1N=0.102kgf=0.2248lbs.
1mm=0.03937inch

Dimensions of Motor Attachment

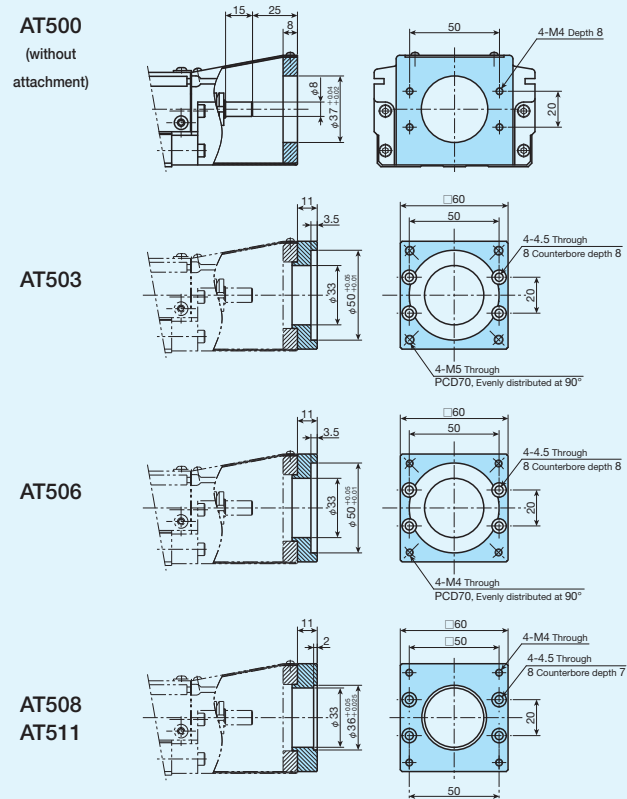
TC50EB



TC60EB

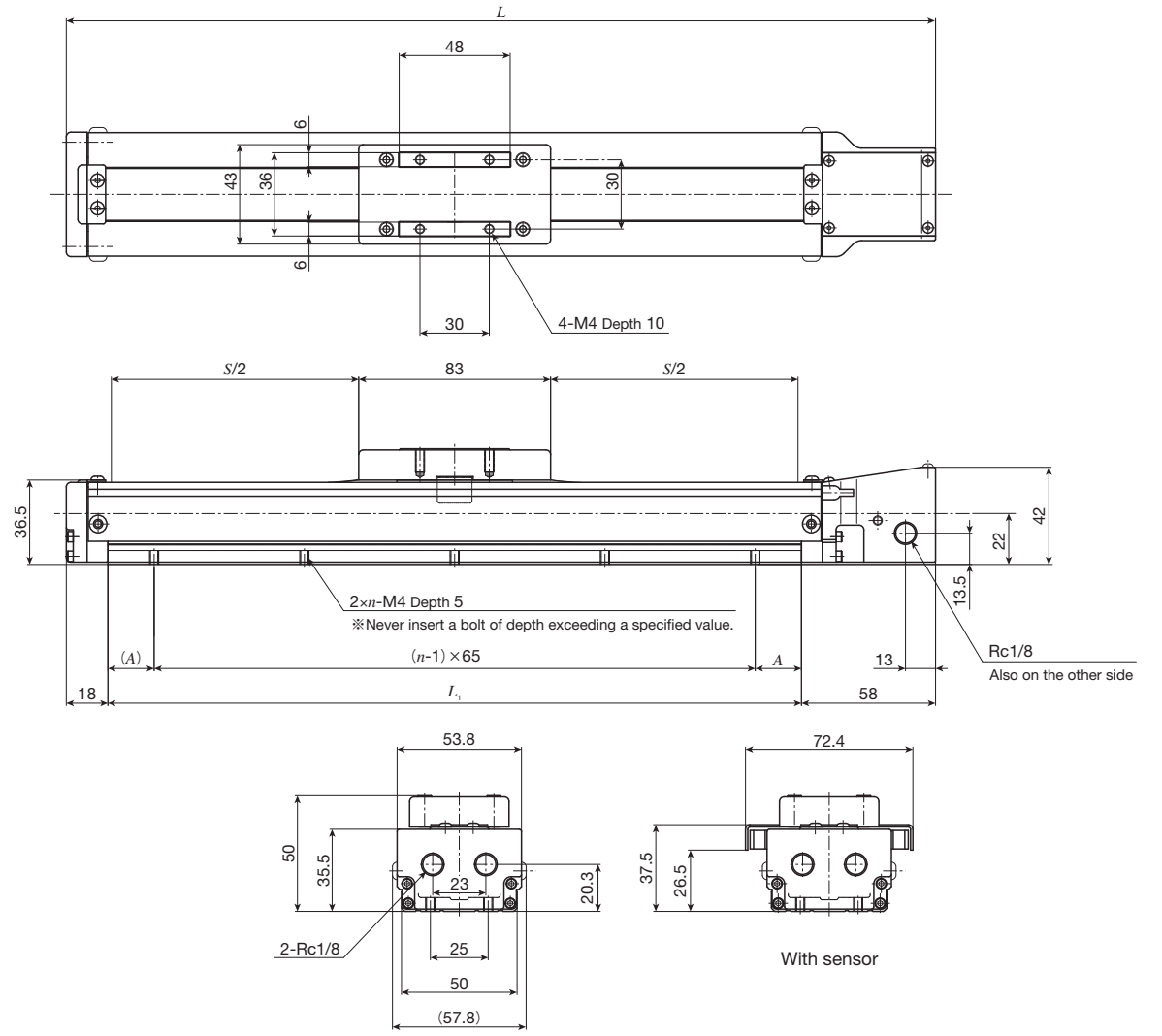


TC86EB



IKO Cleanroom Precision Positioning Table TC

TC50EB

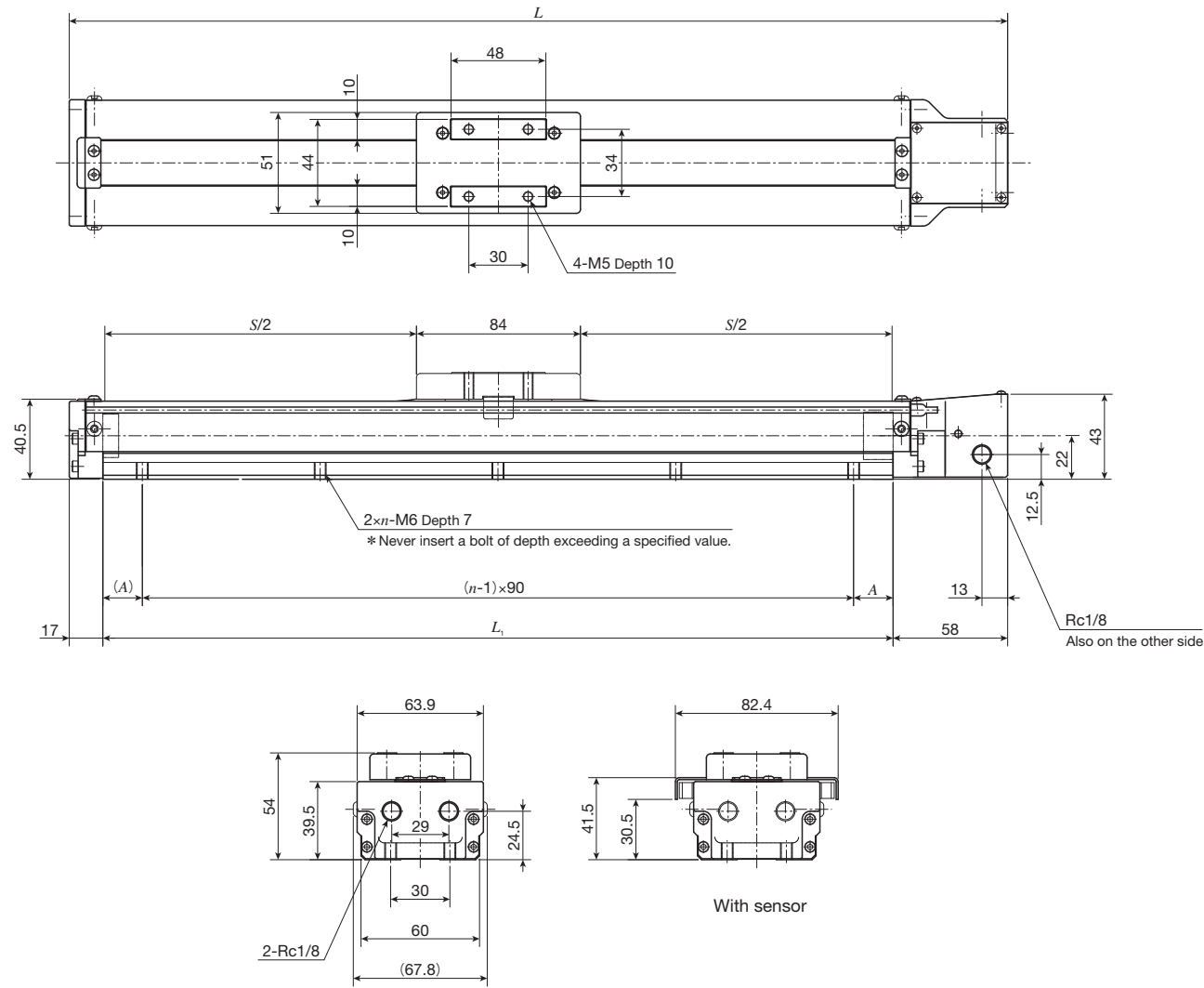


unit: mm

| Bed length L_1 | Overall length L | Stroke length S | Mounting holes of bed | | Mass (Ref.) kg |
|---------------------|-----------------------|----------------------|-----------------------|-----|-------------------|
| | | | A | n | |
| 150 | 226 | 50 | 10 | 3 | 0.9 |
| 200 | 276 | 100 | 35 | 3 | 1.0 |
| 250 | 326 | 150 | 27.5 | 4 | 1.1 |
| 300 | 376 | 200 | 20 | 5 | 1.2 |

IKO Cleanroom Precision Positioning Table TC

TC60EB

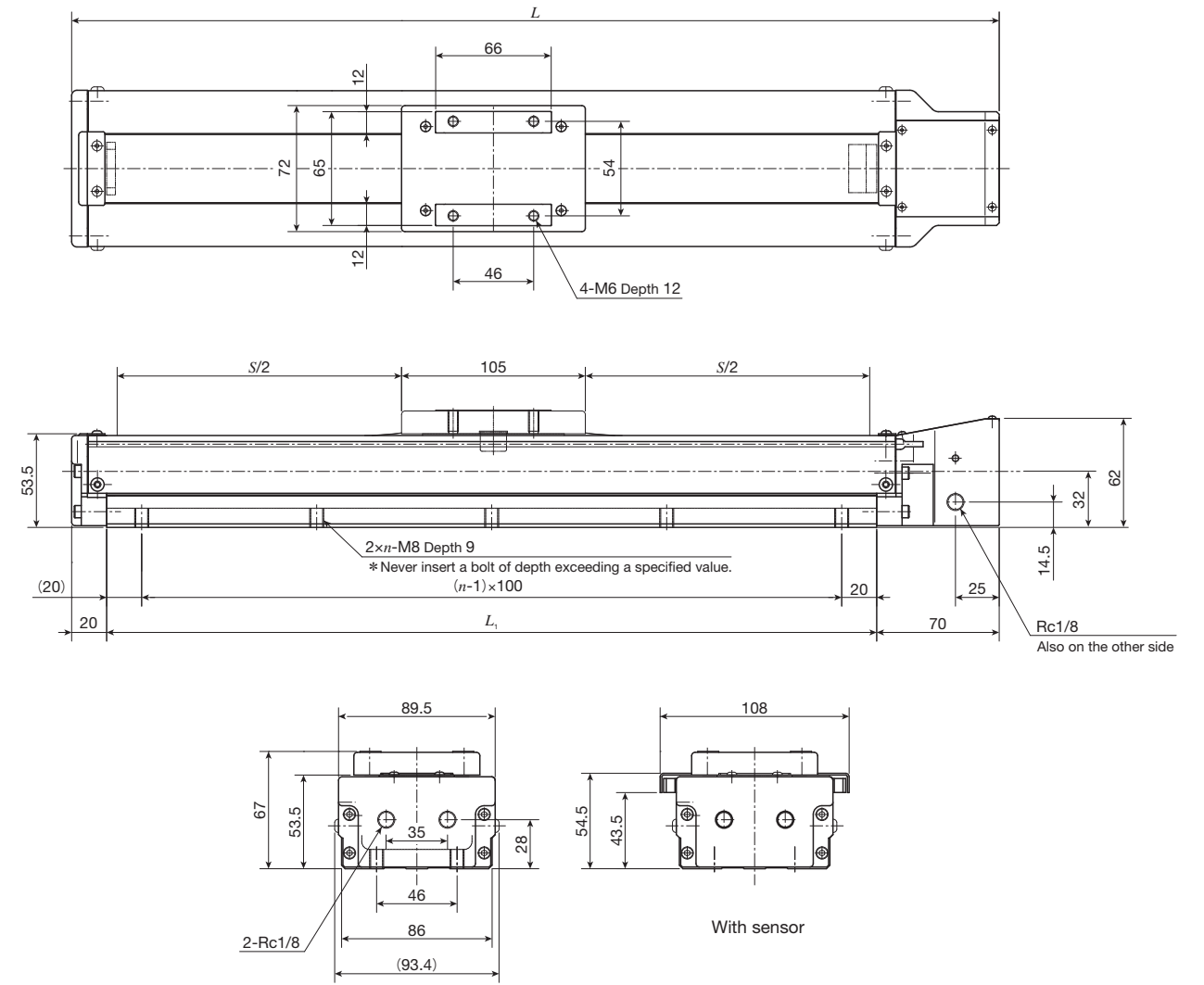


unit: mm

| Bed length L_1 | Overall length L | Stroke length S | Mounting holes of bed | | Mass (Ref.) kg |
|---------------------|-----------------------|----------------------|-----------------------|-----|-------------------|
| | | | A | n | |
| 150 | 225 | 50 | 30 | 2 | 1.1 |
| 200 | 275 | 100 | 10 | 3 | 1.3 |
| 300 | 375 | 200 | 15 | 4 | 1.7 |
| 400 | 475 | 300 | 20 | 5 | 2.0 |
| 500 | 575 | 400 | 25 | 6 | 2.4 |
| 600 | 675 | 500 | 30 | 7 | 2.7 |

Remark: Motor attachment for stepper motor is 8mm lower than the bottom of the bed.

TC86EB



unit: mm

| Bed length L_1 | Overall length L | Stroke length S | Mounting holes of bed n | Mass (Ref.) kg |
|---------------------|-----------------------|----------------------|------------------------------|-------------------|
| | | | | |
| 440 | 530 | 300 | 5 | 4.2 |
| 540 | 630 | 400 | 6 | 4.8 |
| 640 | 730 | 500 | 7 | 5.4 |
| 740 | 830 | 600 | 8 | 6.0 |
| 840 | 930 | 700 | 9 | 6.6 |
| 940 | 1 030 | 800 | 10 | 7.3 |